

ART 34 ANDT

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**As enclosed to IPER****We claim:**

5     1. A process for regenerating a hydrogenation catalyst which is formed by an active composition, which has been applied to a nonporous, metallic support and which has been used in a gas-phase selective hydrogenation of acetylene in a C<sub>2</sub> fraction or of propyne and/or propadiene in a C<sub>3</sub> fraction which comprises stripping at from 50 to 300°C with a substance or a substance mixture which under the process  
10    conditions has no oxidizing action and is present in the gaseous state.

2. A process as claimed in claim 1, wherein the metallic support is in the form of a woven mesh or knitted mesh.

15    3. A process as claimed in claim 1 or 2, wherein the substance or substance mixture which is used for stripping is selected from the group consisting of hydrogen, nitrogen, argon, hydrocarbons, preferably saturated hydrocarbons, particularly preferably methane.

20    4. A process as claimed in claim 3, wherein nitrogen or a mixture of nitrogen and hydrogen is used for stripping.

5. A process as claimed in any of claims 1 to 4, wherein stripping is carried out at from 70 to 250°C, preferably from 100 to 150°C.  
25    6. A process as claimed in any of claims 1 to 5, wherein the hydrogenation catalyst is rinsed with a preferably nonpolar organic solvent or solvent mixture in addition to stripping.

30    7. A process as claimed in claim 6, wherein rinsing is carried out at ambient temperature.

8. A process as claimed in claim 6 or 7, wherein rinsing is carried out for a period of from 15 minutes to a plurality of days.

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9. A process as claimed in any of claims 6 to 8 carried out in situ, preferably in supernatant solvent and/or in solvent circulated by means of a pump.
10. A process as claimed in any of claims 6 to 8 carried out ex situ, preferably in supernatant solvent and/or in solvent circulated by means of a pump, preferably with additional sparging with gas and/or with the aid of ultrasound.
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11. A process as claimed in any of claims 6 to 10, wherein the hydrogenation catalyst is firstly rinsed and subsequently stripped.
- 10 12. A process for the repeated regeneration of a hydrogenation catalyst, which comprises regenerating the hydrogenation catalyst two or more times by stripping as claimed in any of claims 1 to 5 or by rinsing and stripping as claimed in any of claims 6 to 11 and subsequently by oxidative treatment or a combination of stripping as claimed in any of claims 1 to 5 or rinsing and stripping as claimed in any of claims 6 to 11 and oxidative treatment.
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13. A process as claimed in any of claims 1 to 12, wherein the hydrogenation catalyst is a thin-film catalyst.
- 20 14. A process as claimed in claim 13, wherein the hydrogenation catalyst is formed by an active composition comprising one or more hydrogenation-active metals, preferably palladium, particularly preferably silver-doped palladium.